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Dairy Cattle Breeds

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UNITED STATES DEPARTMENT OF AGRICULTURE

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1412, Care and Management of Dairy Bulls
1470, Care and Management of Dairy Cows
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1779, Beef Cattle Breeds for Beef and Milk
1974, The Dairy Herd Improvement Association Program
1998, Selecting Dairy Cattle on the Basis of Type and Production Records
2017, Clean Milk Production
2052, Better Feeding of Livestock

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Washington, D. C.

Revised April 1958

Dairy Cattle Breeds

Dairy cows are raised primarily for the milk they produce. Any cow that produces more milk than that needed to nourish a calf may be classified as a dairy cow.

The outstanding producers usually receive special care and attention. Their offspring are usually carefully mated. Years of special care and selective breeding have produced the modern dairy cows and the modern dairy breeds.

Modern dairy cows are truly remarkable. A highly productive one gives enough milk in a day to supply an average family for a month.

Modern dairy cows are angular and refined and possess conspicuous udder development. They respond to careful feeding and management and convert a large proportion of the feed and water they consume into milk.

A modern dairy breed may be loosely defined as a "family." Like the members of a human family, all dairy cattle of a certain breed have a common origin. They also have characteristics that are readily distinguished. The characteristics include size, shape, shape and size of horns, and color—or combinations of color in certain prescribed patterns. An individual within a breed may be a purebred, or a registered purebred (see p. 19).

SIX DAIRY BREEDS

About 70 percent of the dairy cattle in the United States belong to six breeds—Ayrshire, Brown Swiss, Guernsey, Holstein-Friesian,

Jersey, and Red Danish. Each breed is discussed in the following pages. Famous animals from 5 of the 6 breeds are pictured. The bulls pictured are proved sires (see p. 19). All have established notable records under artificial insemination service.

Definitions for the age categories used in the production tables for cows appear on page 19. The production figures themselves (except for Red Danish cows) were furnished by the respective breed associations. They represent the average production of all cows of the given breed on test during the last herd-test year, as reported in 1957.

The Red Danish production figures were compiled from dairy-herd-improvement-association (see p. 19) records on file with the United States Department of Agriculture. They represent the average production of all Red Danish cows on test during the last herd-test year, as compiled in 1957.

Ayrshire

ORIGIN AND HISTORY

The Ayrshires originated in the county of Ayr, Scotland. They were first recognized as a dairy breed in 1814. The details of their development cannot be traced. It is assumed, however, that several foreign breeds were crossed with native cattle to produce them.

The foreign breeds include the Teeswater stock, Dutch or Flemish cattle, and cattle from the Channel Islands. The Teeswater stock developed into the Shorthorn breed in

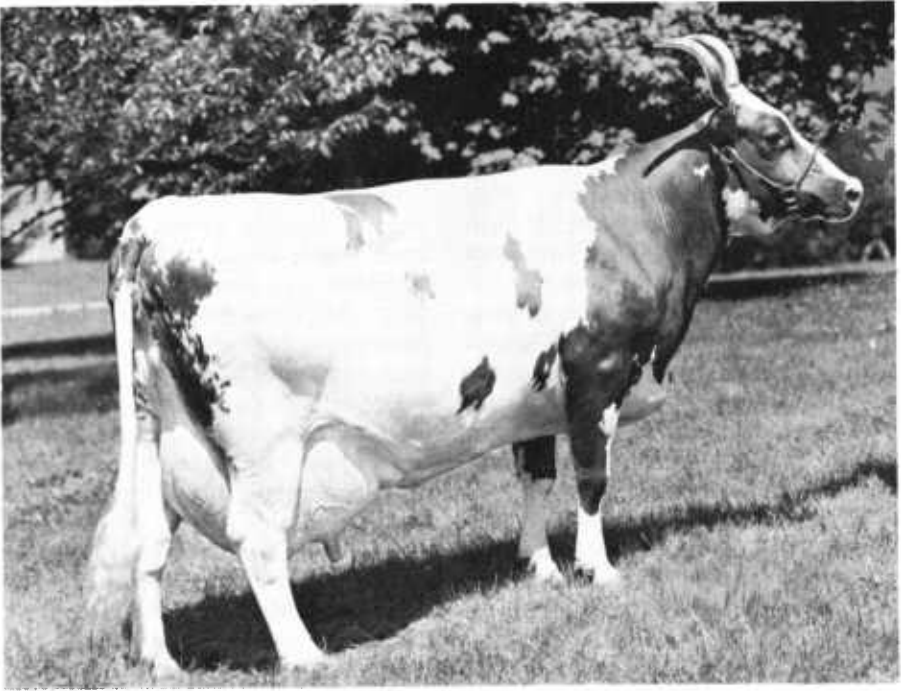


FIGURE 1.—Ayrshire cow : Neshaminy Miss Phett.
(Courtesy of Ayrshire Breeders Association.)

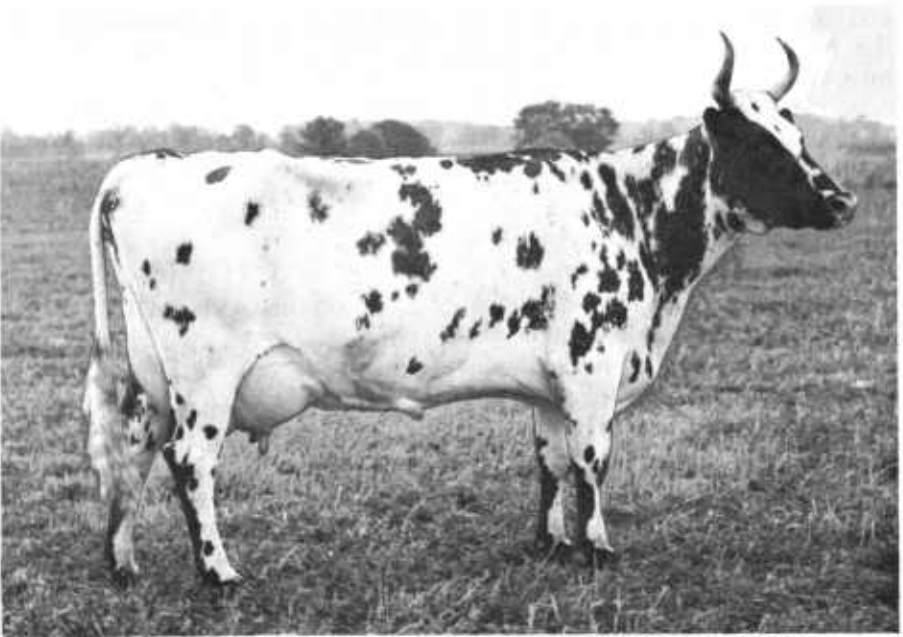


FIGURE 2.—Ayrshire cow : Proud Ruler's Maida.
(Courtesy of Ayrshire Breeders Association.)

England. The Dutch or Flemish cattle later emerged as Holsteins. The cattle from the Channel Islands helped form the Guernsey and Jersey breeds.

The first Ayrshires were imported into the United States in 1822. Other early importations occurred in 1828 and 1831. The breed is now well established in nearly every State. Many famous Ayrshire herds in the United States have contributed to improvement of the breed.

GENERAL CHARACTERISTICS

The Ayrshires are called the "aristocrats of the dairy breeds" because of their stylish and distinctive appearance (fig. 1). They carry more flesh than some of the other dairy breeds and become smooth and shapely when they are well fed. Their attractive horns, which turn upward and outward, contribute to

their striking appearance. The cows are noted for their level top lines and symmetrical udders.

Score cards adopted by the Purebred Dairy Cattle Association (see p. 20) describe the Ayrshire characteristics as follows:

Color.—Red of any shade, mahogany, brown or these with white, or white, each color clearly defined. Distinctive red and white markings preferable; black or brindle markings strongly objectionable.

Size.—A mature cow in milk should weigh about 1,150 pounds and a mature bull in breeding condition, 1,800 pounds.

Horns.—Horns should incline upward, small at base, refined, medium length and tapering toward tips.

The Ayrshires are said to be "good rustlers." They forage under adverse feeding or climatic conditions. They do well on pasture. When pastures are poor, they are said to need less grain to keep in condition than some of the other dairy breeds. Ayrshire cows utilize roughage efficiently and make

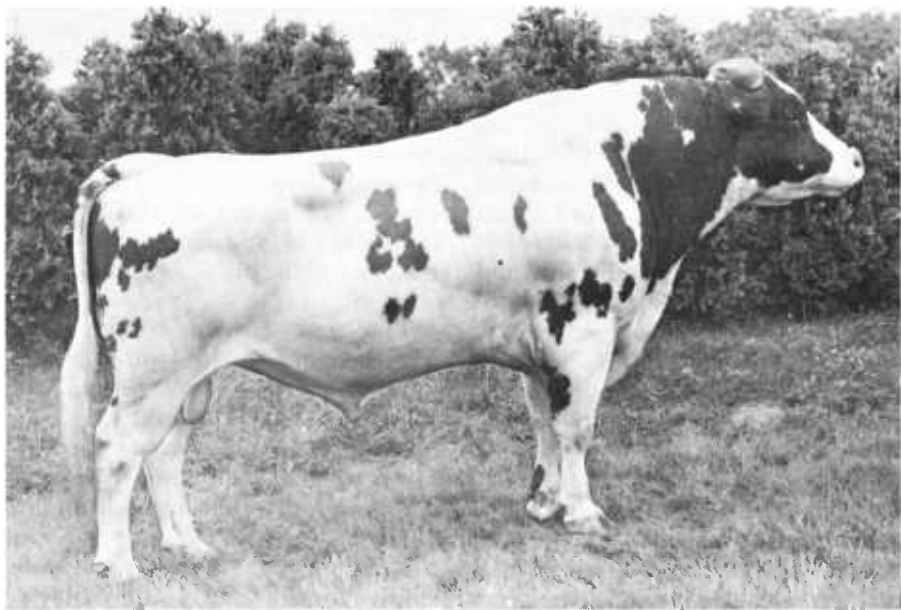


FIGURE 3.—Ayrshire bull: Strathglass Laird's Leader.

(Courtesy of New York Artificial Breeders' Cooperative, Inc.)

TABLE 1.—*Ayrshire production figures*

Age class	Pounds of milk	Pounds of butterfat
Junior 2-year-olds.....	8, 107	338
Senior 2-year-olds.....	8, 380	352
Junior 3-year-olds.....	8, 930	374
Senior 3-year-olds.....	9, 341	390
Junior 4-year-olds.....	9, 842	407
Senior 4-year-olds.....	10, 068	417
Mature cows.....	10, 545	430

good use of limited grain when in high production.

PRODUCTION

Ayrshire cows produce an excellent flow of 4-percent milk, which is about average for the dairy breeds. The milk is strikingly white below the cream line. The fat globules are small and rise to a "tight" cream line. Ayrshire milk is highly regarded for making cheese. Production figures for Ayrshire cows appear in table 1.

SOME FAMOUS AYRSHIRES

Neshaminy Miss Phett (fig. 1), a famous Ayrshire cow, once held the United States record for the highest yearly production of butterfat (cows of all breeds milked twice a day for 305 days). Miss Phett produced 1,036 pounds of butterfat.

Another famous Ayrshire, Proud Ruler's Maida (fig. 2), also established a United States breed record. She produced more milk than any other Ayrshire cow in her class (cows less than 5 years old, milked twice a day for 305 days). Her record was 23,913 pounds of milk, or about 36 quarts a day.

Strathglass Laird's Leader (fig. 3), an outstanding Ayrshire bull, has been used as a sire by the New York Artificial Breeders' Cooperative. The average production of 26

of his artificially sired daughters was 11,886 pounds of milk (test, 4.1 percent) and 483 pounds of butterfat during the last test year.

Brown Swiss

ORIGIN AND HISTORY

Brown Swiss dairy cattle originated in Switzerland. The people of Switzerland sometimes call them Schwyzer or Brown Schwyzer, as a tribute to the canton of Schwyz, where the breed achieved its initial improvement.

Like the Ayrshire, Brown Swiss development cannot be traced. Large cattle from Germany (the Pinzgau breed) may have been crossed with native Swiss cattle to produce them. It is usually assumed, however, that the breed is centuries old and that little or no foreign cattle influenced its development.

The first Brown Swiss cattle were brought to the United States in 1869. Other importations occurred in 1882, 1889, and 1906. In 1906, importations were stopped because of foot and mouth disease. All the importations brought in but 155 head.

Brown Swiss cattle have made many gains in the United States. Descendants of the 155 that were imported fill our famous herds in

nearly every State. The first Brown Swiss bull registered in the United States was named William Tell as a tribute to Switzerland and Switzerland's epic hero.

GENERAL CHARACTERISTICS

Most Brown Swiss have the refinement and angularity typical of dairy cows (fig. 4). But they appear to be larger and stronger than some of the other dairy breeds. They are easily identified by their color. Score cards adopted by the Purebred Dairy Cattle Association describe Brown Swiss characteristics as follows:

Color.—A shade of brown varying from a silver to a dark brown. Hair inside ears is a lighter color than body. Nose and tongue black, with a light colored band around nose. Color markings which bar registry are: White switch, white on sides, top head or neck and legs above knees or hocks. White on belly or lower legs objectionable.

Size.—Strong and vigorous. Size and ruggedness with quality desired. Extreme refinement undesirable. A mature cow in milk should weigh about 1,500 pounds. A mature bull in breeding condition should weigh about 2,000 pounds.

Horns.—Inclining forward and slightly up. Moderately small at base, medium length, tapering toward black tips.

Breeders and farmers like the ruggedness and strength of Brown Swiss cattle. Farmers claim that they need less care and attention than some of the other dairy breeds. Brown Swiss cattle eat well and make good use of pasture and harvested feed.

PRODUCTION

Brown Swiss cows produce an excellent flow of 4-percent milk. The cows are said to mature slower and thus to remain in production at more advanced ages than some of the other breeds. Production fig-

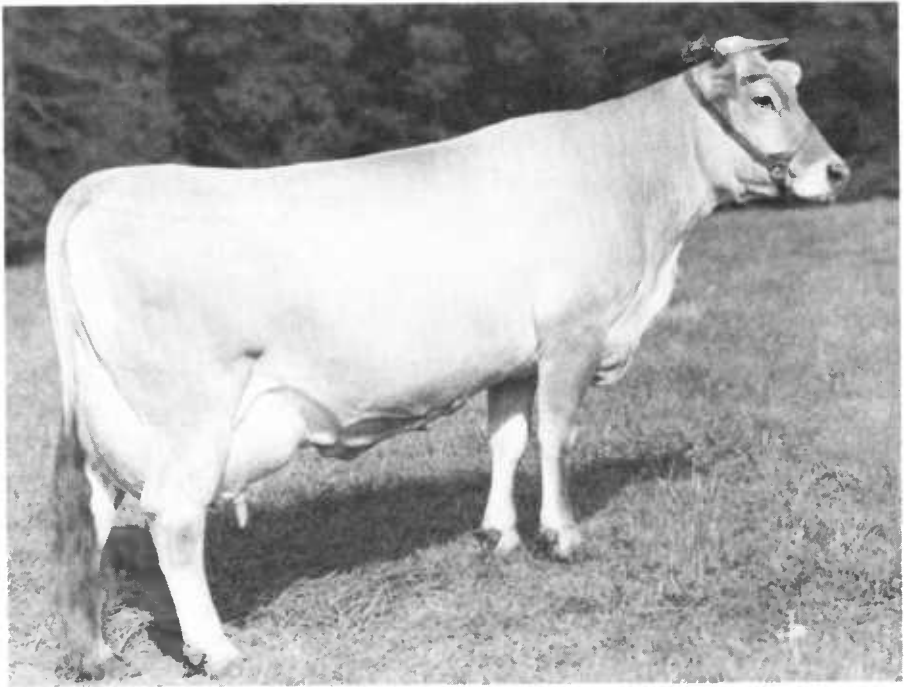


FIGURE 4.—Brown Swiss cow : Royal's Rapture of Lee's Hill.

(Courtesy of Brown Swiss Cattle Breeders Association.)

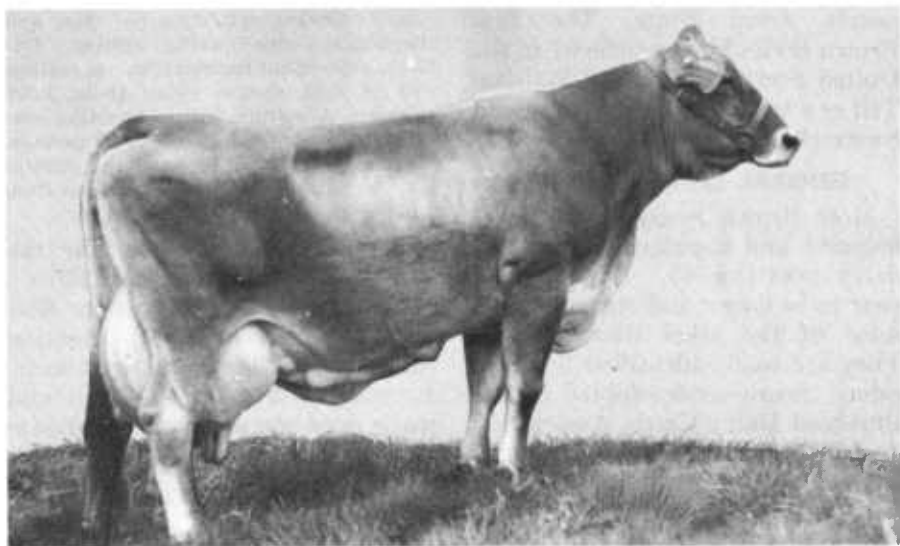


FIGURE 5.—Brown Swiss cow : Active Acres Bessie.
(Courtesy of Brown Swiss Cattle Breeders Association.)

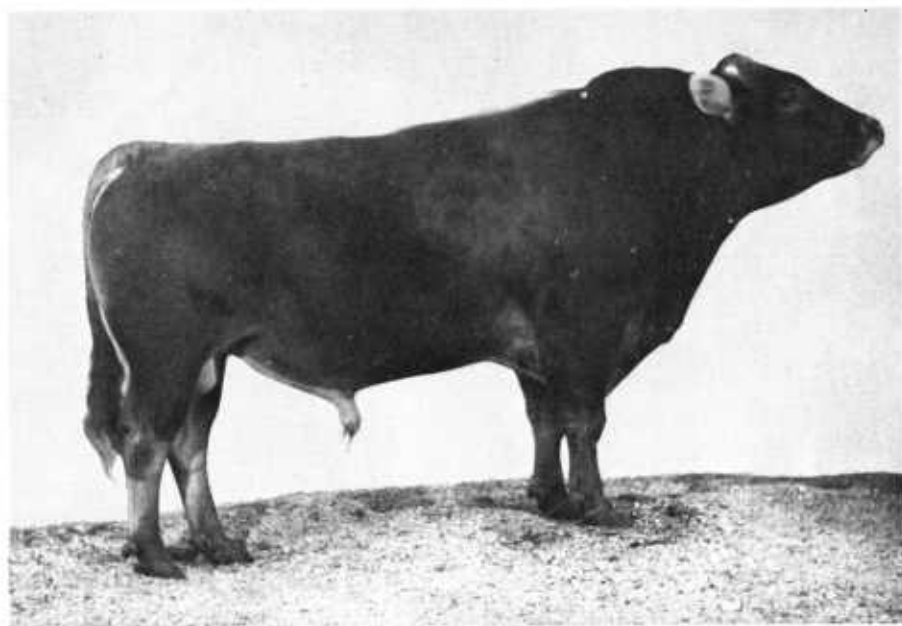


FIGURE 6.—Brown Swiss bull : Rainbow Wonder.
(Courtesy of Northern Illinois Breeding Cooperative.)

TABLE 2.—*Brown Swiss production figures*

Age class	Pounds of milk	Pounds of butterfat
Junior 2-year-olds.....	8, 010	331
Senior 2-year-olds.....	8, 371	348
Junior 3-year-olds.....	9, 100	378
Senior 3-year-olds.....	9, 544	392
Junior 4-year-olds.....	10, 142	417
Senior 4-year-olds.....	10, 481	428
Cows, 5 years old.....	10, 555	433
Mature cows.....	11, 087	449

ures for Brown Swiss cows appear in table 2.

SOME FAMOUS BROWN SWISS

Royal's Rapture of Lee's Hill (fig. 4), a United States breed champion in her class (mature cows, milked 3 times a day for 365 days), produced 34,669.8 pounds of milk and 1,465.39 pounds of butterfat during her record year.

Active Acres Bessie (fig. 5), a United States champion, is another famous Brown Swiss. During her record year, she produced 1544.75 pounds of butterfat, the highest butterfat production recorded for any cow of any breed up to April 26, 1957. "Bessie" was milked 3 times a day for 365 days.

Rainbow Wonder (fig. 6), an outstanding Brown Swiss bull, has been used as a sire by the Northern Illinois Breeding Cooperative. The average production of 101 of his artificially sired daughters was 11,339 pounds of milk (test, 4.1 percent) and 470 pounds of butterfat during the last test year.

Guernsey

ORIGIN AND HISTORY

The Guernsey breed of dairy cattle originated on the island of Guernsey, which is one of the Channel Islands. Guernsey is only 9

miles long and 5 miles wide. It is about 30 miles off the coast of France in the English Channel.

For many years all the cattle on the Channel Islands were referred to as Alderney cattle, but distinct breeds gradually evolved. The islands of Alderney, Sark, and Guernsey eventually produced the Guernsey breed.

Guernsey cattle apparently developed from Normandy and Brittany cattle brought to Guernsey in the years 960 and 1060. The Normandy cattle were larger and apparently influenced Guernsey development more than the Brittany cattle. Guernseys were a separate and distinct breed as early as 1817.

In 1830 or 1831, an American sea captain sailed from the Channel Islands with the first Guernseys imported into America (two heifers and a bull). One of the heifers was lost. Descendants of the survivors still appear in Guernsey herds today. Another small importation occurred in 1840, and more extensive ones in 1870, 1913, and 1914. About 13,000 Guernseys have been brought to the United States and registered.

GENERAL CHARACTERISTICS

Guernsey cattle are hardy and adaptable. Many of the cows exhibit markedly the angularity and

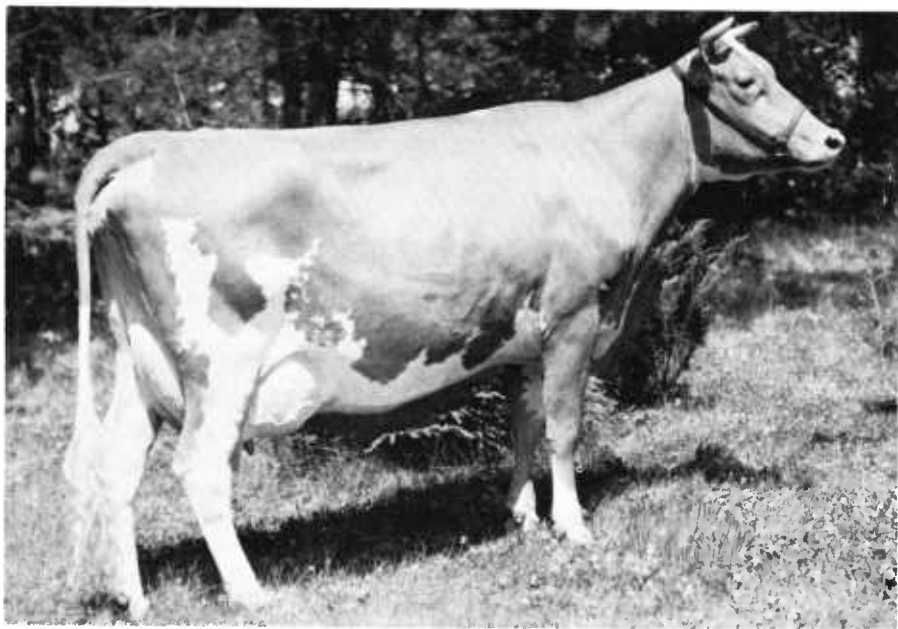


FIGURE 7.—Guernsey cow : Quail Roost Noble Primrose.
(Courtesy of American Guernsey Cattle Club.)

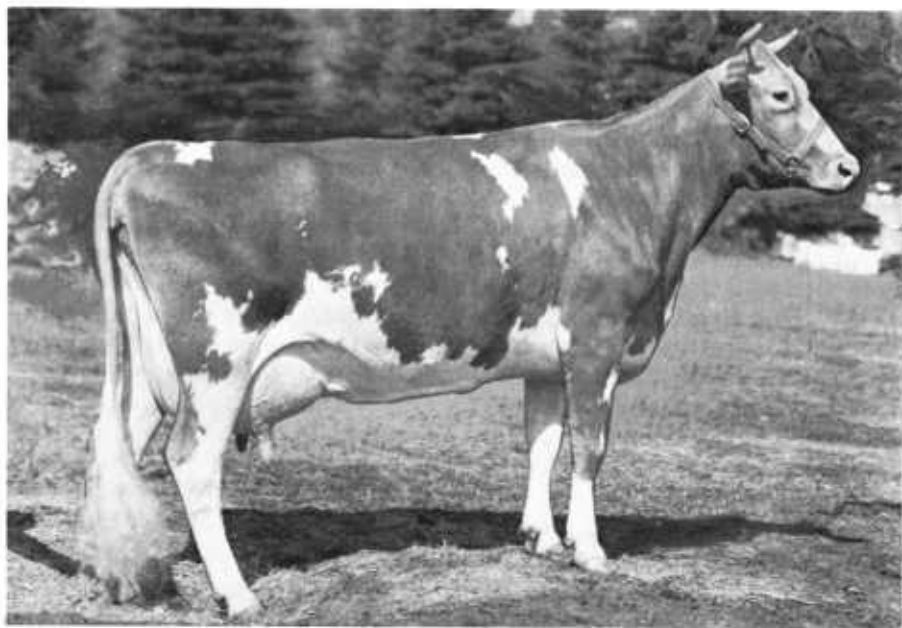


FIGURE 8.—Guernsey cow : Dotty of West Side Farm.
(Courtesy of American Guernsey Cattle Club.)

refinement typical of the dairy breeds (fig. 7). Score cards adopted by the Purebred Dairy Cattle Association describe Guernsey characteristics as follows:

Color.—A shade of fawn with white markings clearly defined. Skin should show golden yellow pigmentation. When other points are equal, a clear or buff muzzle will be favored over a smoky or black muzzle.

Size.—A mature cow in milk should weigh at least 1,100 pounds. A mature bull in breeding condition should weigh about 1,700 pounds. The calves at birth weigh from 65 to 85 pounds.

The yellow pigmentation in the skin of Guernseys is said to be related to the golden color of their milk.

Guernseys apparently got a slow start in the United States. Today, however, they probably rank second to Holsteins as the most numerous of the dairy breeds in this country.

PRODUCTION

Guernsey milk is outstanding because of its rich, golden color.

Some consumers willingly pay more for it than for other milk. Production figures for Guernsey cows appear in table 3.

SOME FAMOUS GUERNSEYS

Quail Roost Noble Primrose (fig. 7) is an outstanding Guernsey. She was a national breed champion twice and produced 13,894 pounds of milk and 704 pounds of butterfat as a 2-year-old.

Dotty of West Side Farm (fig. 8) is another famous Guernsey. Her record of 25,338 pounds of milk and 1,329 pounds of butterfat once qualified her as the second best Guernsey (mature cows, milked 3 times a day for 365 days) in both categories in the United States. It is unusual for a cow to score high in both categories.

McDonald Farms Inheritor (fig. 9), an outstanding Guernsey bull, has been used as a sire by the Maryland Artificial Breeding Cooperative, Inc. The average production of 115 of his artificially sired

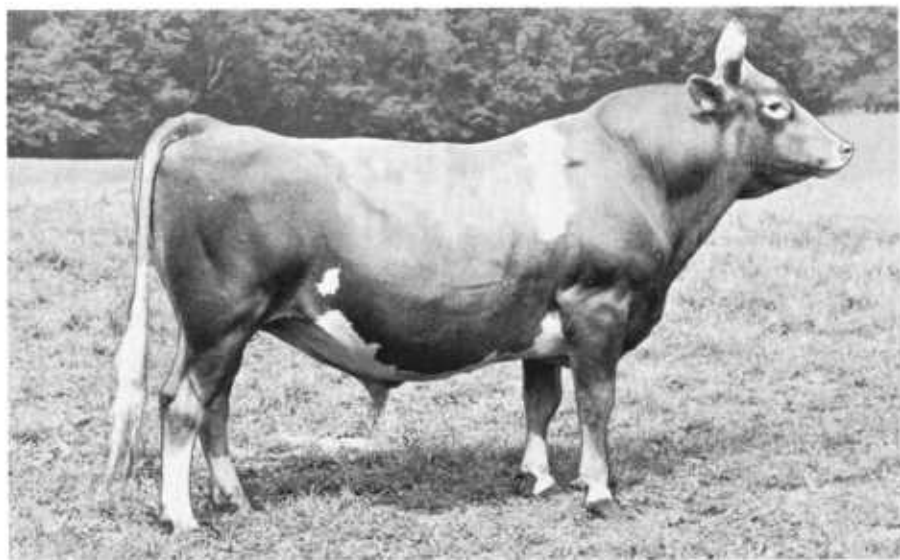


FIGURE 9.—Guernsey bull : McDonald Farms Inheritor.

(Courtesy of Maryland Artificial Breeding Cooperative, Inc.)

TABLE 3.—*Guernsey production figures*

Age class	Pounds of milk	Pounds of butterfat
Junior 2-year-olds.....	7, 307	356
Senior 2-year-olds.....	7, 590	372
Junior 3-year-olds.....	8, 051	397
Senior 3-year-olds.....	8, 250	405
Junior 4-year-olds.....	8, 598	419
Senior 4-year-olds.....	8, 824	430
Mature cows.....	9, 021	431

daughters was 8,048 pounds of milk (test, 5.2 percent) and 422 pounds of butterfat during the last test year.

Holstein-Friesian

ORIGIN AND HISTORY

The Holstein-Friesian breed of dairy cattle (commonly called Holstein in North America, and Friesian in many other countries) probably originated in northern Holland (Netherlands). The breed spread to other parts of the Netherlands, then into northern France

and finally eastward into Germany as far as Holstein or Schleswig-Holstein. Herdsmen in the province of Friesland (Netherlands), according to tradition, always had the best cattle.

The earliest settlers from Holland brought the first Holland cattle to the United States, perhaps as early as 1621. But the most significant importation occurred in 1861. A bull and four cows from that importation and another bull from an unsuccessful 1857 importation founded a herd in Belmont, Mass.,

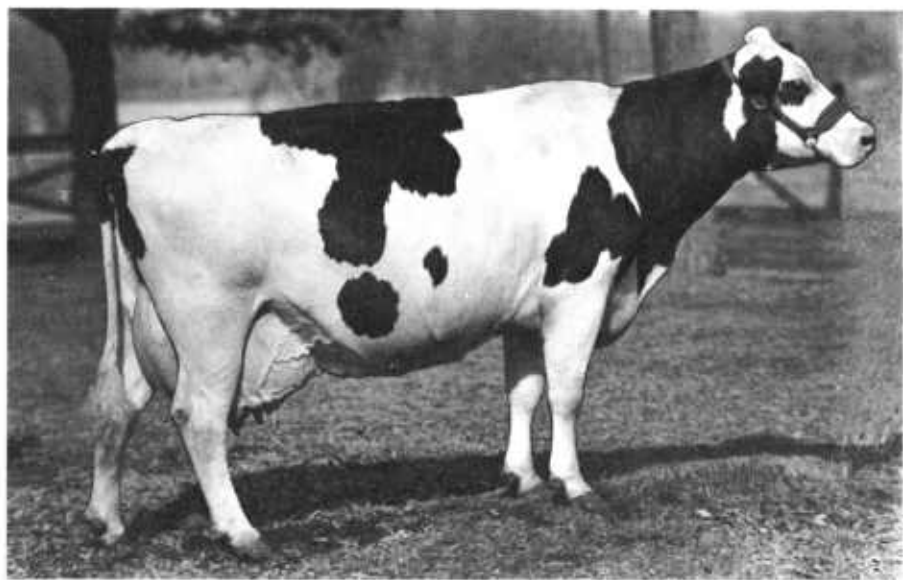


FIGURE 10.—Holstein cow: Haven Hill Crescent Gewina Comt.
(Courtesy of Holstein-Friesian Association of America.)

that supplied cattle to 12 States. No other importations occurred after 1905 because of foot and mouth disease in some European countries. About 8,800 Holsteins have been imported into the United States and Canada. Holsteins are said to predominate in numbers as a dairy breed in both countries.

GENERAL CHARACTERISTICS

Holsteins are the largest of the dairy breeds. However, they are refined and angular when in milk, and few of them show evidence of beefiness (fig. 10). The cows are considered quiet and easy to handle with no loss of alertness or smart carriage. Score cards adopted by the Purebred Dairy Cattle Association describe Holstein-Friesian characteristics as follows:

Color.—Black and white markings clearly defined. Color markings which bar registry are solid black, solid white, black in switch, black belly, black encircling leg touching hoof, black from hoof to knee or hock, black and white intermixed to give color other than distinct black and white.

Size.—A mature cow in milk should weigh 1,500 pounds or more. A mature bull in breeding condition should weigh 2,200 pounds or more. Calves at birth weigh from 80 to 125 pounds.

Holsteins are hardy feeders. They have unusual ability to do well on roughage and they thrive on good pasture. The cows take on

flesh readily when dry—a tendency that increases their salvage value when their dairy usefulness has ended.

PRODUCTION

Holstein milk is strikingly white. The whiteness is apparently due to the fact that Holsteins convert certain plant substances into true vitamin A more readily than the other dairy breeds.

Holstein milk usually tests lower in butterfat content than the milk of other dairy breeds. But Holstein cows, nonetheless, produce large amounts of butterfat. Production figures for Holstein cows appear in table 4.

SOME FAMOUS HOLSTEINS

Haven Hill Crescent Gewina Count (fig. 10) produced a record amount of butterfat (1,523 pounds) under a given set of conditions (mature cows, milked 3 times a day for 365 days).

Hamaret Queen Prospector (fig. 11), considered an excellent example of a registered Holstein type, produced 35,565 pounds of milk and 1,319.1 pounds of butterfat as a 6-year-old.

Sir Bess Ormsby Fobes Dean (fig. 12), an outstanding Holstein bull, has been used as a sire by the New York Artificial Breeding Co-

TABLE 4.—*Holstein production figures*

Age class	Pounds of milk	Pounds of butterfat
Junior 2-year-olds.....	10, 234	376
Senior 2-year-olds.....	10, 826	398
Junior 3-year-olds.....	11, 390	418
Senior 3-year-olds.....	11, 908	437
Junior 4-year-olds.....	12, 475	458
Senior 4-year-olds.....	12, 717	467
Mature cows.....	13, 099	481



FIGURE 11.—Holstein cow : Hamaret Queen Prospector.
(Courtesy of Holstein-Friesian Association of America.)



FIGURE 12.—Holstein bull : Sir Bess Ormsby Fobes Dean.
(Courtesy of New York State College of Agriculture at Cornell University.)

operative, Inc. The average production of 791 of his artificially sired daughters was 12,449 pounds of milk (test, 3.7 percent) and 458 pounds of butterfat. He is a Gold Medal sire on the basis of 292 classified daughters with an average score of 81.5.

Jersey

ORIGIN AND HISTORY

The Jersey breed of dairy cattle originated on the island of Jersey, which is one of the Channel Islands. Like the island of Guernsey, Jersey is small. Its average length is 10 miles; average width, $6\frac{1}{4}$ miles.

Jerseys were once known as Alderneys, a term that included Guernseys. Normandy and Brittany cattle probably contributed to their development (see p. 9). Foreign cattle for breeding and milking purposes, however, were excluded from the Channel Islands after 1789.

Importations of Jerseys into the United States began in the early 1800's. More or less steady importation has continued since that time, except during war years and during outbreaks of foot and mouth disease. By 1947, about 27,800 imported Jerseys were registered in this country. There are now famous Jersey herds in nearly every State.

GENERAL CHARACTERISTICS

Jerseys are often considered the most appealing of all dairy cows. They are small and exhibit the dairy characteristics to a remarkable degree (fig. 13). In some sections, the word "Jersey" is a synonym for "dairy cow." Score cards adopted by the Purebred Dairy Cattle Association describe the Jersey characteristics as follows:

Color.—A shade of fawn, with or without white markings.

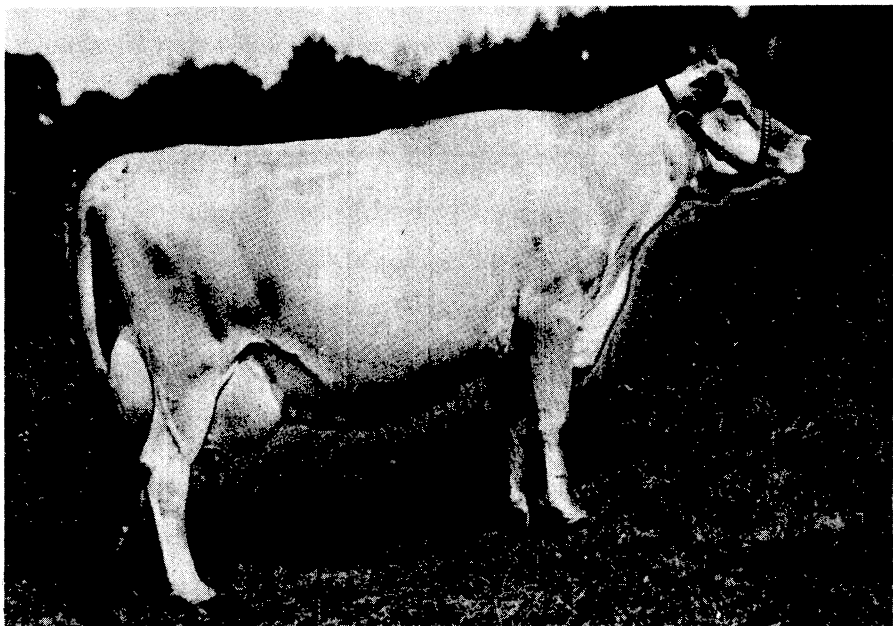


FIGURE 13.—Jersey cow: Opal Crystal Lady.

(Courtesy of American Jersey Cattle Club.)

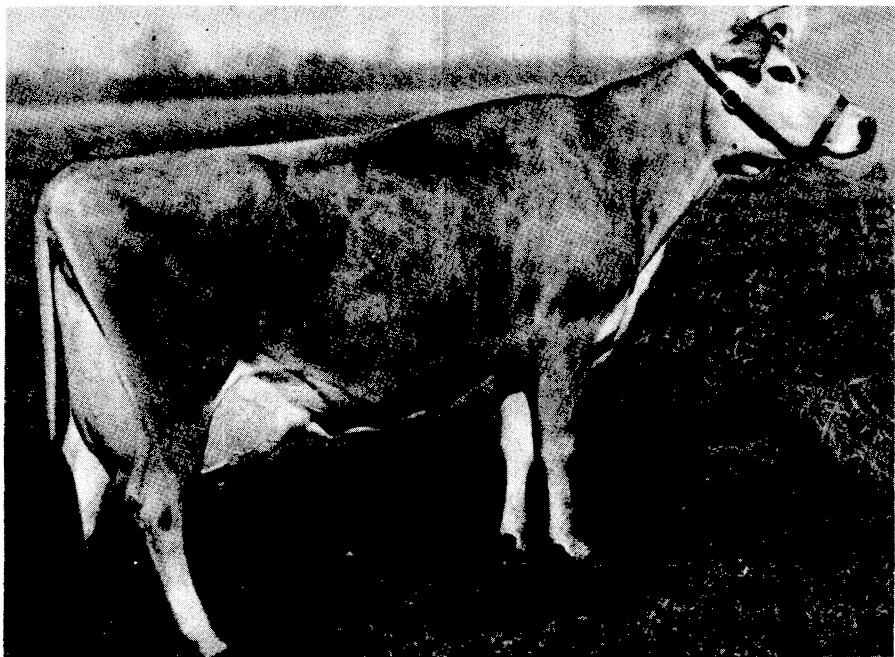


FIGURE 14.—Jersey cow: Marlu Milady's Fashion.

(Courtesy of American Jersey Cattle Club.)

Size.—A mature cow in milk should weight about 1,000 pounds. A mature bull in breeding condition should weigh about 1,500 pounds.

Horns.—Inclining, refined, medium length, and tapering toward tips; no discrimination for absence of horns.

Despite their refinement, Jersey cows are hardy. They are especially noted for their foraging ability. They mature earlier than the other dairy breeds. Many Jersey owners, for example, have their heifers freshen when the heifers are less than 2 years old. The heifers then produce in what is known as a "yearling class." Jerseys are also noted for longevity and for sustained production at advanced ages.

PRODUCTION

Jersey milk is famous for its richness. The average Jersey produces milk that tests at least 5.25

percent butterfat; some of it exceeds 6 percent. Other dairy breeds average about 4 percent. Production figures for Jersey cows appear in table 5.

SOME FAMOUS JERSEYS

Opal Crystal Lady (fig. 13), a breed champion in the United States in both milk and butterfat production, was the first cow of any breed to produce more than 1,000 pounds of butterfat during each of 5 consecutive lactations on 2 milkings a day. Her record is 23,725 pounds of milk and 1,237 pounds of butterfat. She is still adding to her lifetime production, which stood at 188,208 pounds of milk and 10,111 pounds of butterfat during the last official test year.

Marlu Milady's Fashion, another famous Jersey (fig. 14), is a magnificent little animal. Her milk

TABLE 5.—*Jersey production figures*

Age class	Pounds of milk	Pounds of butterfat
Yearling.....	6, 312	337
Junior 2-year-olds.....	6, 602	352
Senior 2-year-olds.....	6, 839	368
Junior 3-year-olds.....	7, 285	393
Senior 3-year-olds.....	7, 514	404
Junior 4-year-olds.....	7, 937	424
Senior 4-year-olds.....	7, 995	428
Cows, 5 to 11 years old.....	8, 373	437
Cows, 12 years old or older.....	8, 083	413

production as a 2-year old (17,496 pounds) was 21 times her body weight (825 pounds) at that time. When 5 years 10 months old, she produced 21,586 pounds of milk (25 times her body weight) and 1,049 pounds of butterfat.

Sybil Owl Maiden Lad (fig. 15), an outstanding Jersey bull, has been used as a sire by the New Hampshire-Vermont Breeding Association. The average production of 91 of his artificially sired daughters was 8,784 pounds of milk (test, 5.0

percent) and 436 pounds of butterfat during the last official test year.

Red Danish

ORIGIN AND HISTORY

Red Danish cattle are probably one of the youngest of the recognized dairy breeds. They originated in Denmark and became a distinct breed about 1878. They were first imported into the United States in 1935, as part of a planned

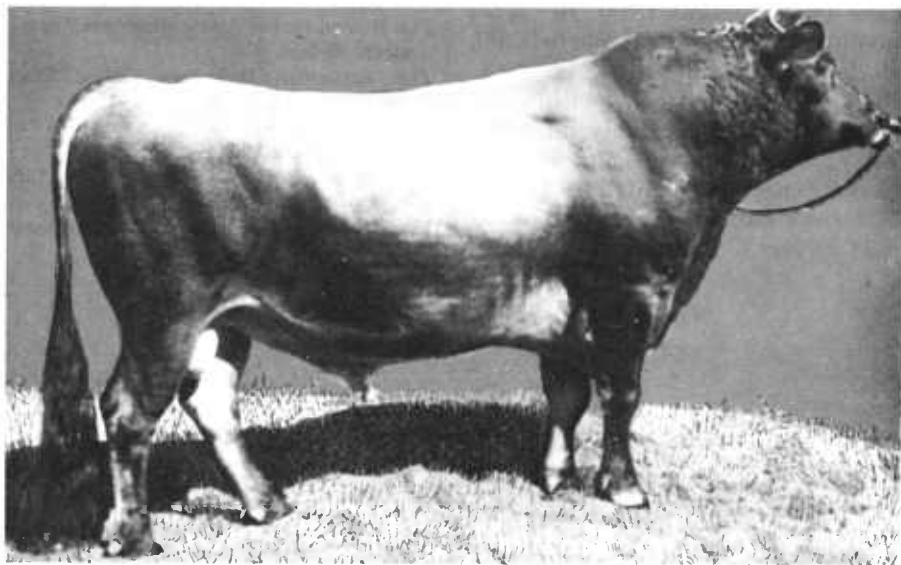


FIGURE 15.—Jersey bull: Sybil Owl Maiden Lad.

(Courtesy of New Hampshire-Vermont Breeding Association.)

program to improve American livestock.

In 1934 a departmental committee was appointed to search for superior germ plasm. At that time the average Danish cow was producing about 100 pounds more butterfat a year than the average American cow.

One member of this committee, Mr. E. L. Anthony, Dean Emeritus of Agriculture, Michigan State University, went to Denmark in 1935 and brought back 20 Red Danish cows and 2 Red Danish bulls. The cattle were finally located at the Agricultural Research Center, Beltsville, Md., after the usual quarantine and a short stay in Minnesota.

The Red Danish herd prospered at Beltsville. Later, a group of farmers in Sanilac and Oscola Counties, Mich., accepted an offer to prove the bulls.

GENERAL CHARACTERISTICS

Red Danish cattle are large. Mature cows weigh 1,300 to 1,500 pounds; mature bulls, 1,800 to 2,200. Both sexes have rugged constitutions. Conformation within a given herd is remarkably uniform. The characteristic red color appears in early crosses with little variation. The cows have well-attached, compact udders.

DUAL-PURPOSE BREEDS

A few breeds of cattle have desirable beef form and also produce more milk and butterfat than are usually produced by typically beef cattle. Examples of such breeds are the Milking Shorthorn, the Red Poll, and the Devon. Additional information about these breeds can be found in Farmers' Bulletin 1779, Beef Cattle Breeds for Beef and for Milk.

OTHER INFORMATION

Breed Associations

A national breed association or club is composed of breeders and dairymen who are interested in a particular breed of dairy cattle. Names and addresses of six such organizations follow:

- The Ayrshire Breeders Association, Brandon, Vt.
- The Brown Swiss Cattle Breeders Association, Beloit, Wis.
- The American Guernsey Cattle Club, Peterborough, N. H.
- The Holstein-Friesian Association of America, Brattleboro, Vt.
- The American Jersey Cattle Club, 1521 E. Broad St., Columbus, Ohio.
- The American Red Danish Cattle Association, Route 3, Marlette, Mich.

TABLE 6.—*Red Danish production figures*

Age class	Pounds of milk	Pounds of butterfat
Junior 2-year-olds.....	7, 603	308
Senior 2-year-olds.....	8, 851	357
Junior 3-year-olds.....	9, 027	360
Senior 3-year-olds.....	8, 410	341
Junior 4-year-olds.....	8, 506	353
Senior 4-year-olds.....	8, 926	359
Mature cows.....	9, 441	384

Definitions

AGE CATEGORIES

Age-category definitions for the production tabulations used in this bulletin follow. Ages given are those of cows at start of test. All cows were milked twice a day for 305 days.

Category	Cows that were—
Junior 2-year-olds---	2 to 2½ years old.
Senior 2-year-olds---	2½ to 3 years old.
Junior 3-year-olds---	3 to 3½ years old.
Senior 3-year-olds---	3½ to 4 years old.
Junior 4-year-olds---	4 to 4½ years old.
Senior 4-year-olds---	4½ to 5 years old.
Mature cows-----	5 years old or older.

OTHER TERMS

Purebred dairy cattle have the characteristics of a certain breed and a documented, purebred ancestry.

Registered purebreds are purebred dairy animals whose owners have completed the formality of registration. The organization sponsoring a particular breed determines the qualifications

needed for registration. Copies of registration rules can be obtained by writing to the various breed associations (see p. 18).

Grade dairy cattle have the characteristics of a particular breed, but are ineligible for registration, usually because their parents are not registered.

Proved sires, in Dairy Herd Improvement Association work (see p. 19), are bulls that have at least five unselected daughters whose production records can be compared with the production records of their respective mothers (dams). If the daughters produce at a high level (either above or near the production level of their dams), the bulls that sired the daughters are known as "good" proved sires. If the daughters produce at a low level, the bulls that sired them are known as "poor" proved sires and their use for breeding purposes is discouraged. Most of the breed associations have similar procedures for issuing proving information although there is some variation regarding the number of daughters required and the inclusion or omission of the dams' average production.

Breed organizations keep the registration records for their respective breeds, which may include the names of animals that have qualified for additional registration because of meritorious performance. The organizations also administer programs that enable breeders to determine the performance of their animals.

The programs include advanced registry testing or herd improvement testing. Some of these advanced registry programs started out as 7- and 30-day tests of individual cows, but these plans have given way to 10-month records with calving requirements included. In 1925 the Ayrshire Breeders Association started the herd test. Other breed associations soon adopted similar

programs. The requirements for these official tests vary somewhat from breed to breed. Details may be secured by writing to the various organizations at the addresses given.

Dairy Herd Improvement Association

The Dairy Herd Improvement Association (DHIA), started in Michigan in 1905, is another means through which dairymen may test their herds. Its facilities are available to any dairyman.

During the first 15 years of its existence, the program accumulated nearly 4 million production records for nearly 2 million cows. Dam-and-daughter records for proving

sires were also accumulated on about 150,000 bulls. The United States Department of Agriculture began to use these records in 1935 in a Nation-wide sire-proving program—a program to find every bull whose daughters will outproduce their mothers.

The United States Department of Agriculture cooperates with the various States in coordinating this program. The Department also furnishes the forms used in collecting the production data and maintains the production records on each cow and bull whose owners participate in the program.

Purebred Dairy Cattle Association

The Purebred Dairy Cattle Association (organized in 1940) consists of three representatives from each of the organizations that sponsor the Ayrshire, Brown Swiss, Guernsey, Holstein, and Jersey breeds of dairy cattle in the United States. It seeks to interest dairy-men and breeders generally in these five breeds and especially in individual animals of the breeds that it recognizes as being purebred and eligible for registration in the herd books.

Under the sponsorship of the Association, the breed organizations have adopted certain rules and procedures. The rules and procedures apply only to individual members (not to the dairy industry generally) and include: uniform rules

for official testing, uniform classification for each breed at State fairs, rules and regulations governing artificial insemination of registered dairy cattle, a code of ethics for public and private sales, a uniform scorecard for judging junior fitting and showmanship contests, and showing and judging procedures.

Headquarters for the Purebred Dairy Cattle Association is at Peterborough, N. H.

American Dairy Cattle Club

The American Dairy Cattle Club strives to improve dairy cattle by applying scientific breeding and handling methods. To further this objective, it collects, verifies, preserves, and publishes genealogical and production records, and other scientific records and information.

The Club recognizes all dairy cattle regardless of color or previous breeding. Proved sires may be registered; their daughters may also be registered. A rating of estimated production is assigned to each registered animal, and the rating is based on the animal's proved inheritance for production.

Animals that do not qualify for immediate registration are tested. If the tests establish their ability to produce, the animals may then be registered.

The American Dairy Cattle Club is a not-for-profit corporation, established under the laws of Illinois in 1936. Its address is Interlaken, N. Y.